CLAIMS

1. An electromagnetic transponder intended to draw power necessary to its operation from a field radiated by a terminal of transmission of a carrier at a first frequency, and to back-modulate a received signal at a rate of a sub-carrier at a second frequency lower than the first one, comprising means capable of demodulating and decoding signals modulated by said sub-carrier.

2. The transponder of claim 1, further comprising an oscillating circuit upstream of a rectifying means capable of providing a D.C. supply voltage to an electronic circuit, the electronic circuit having means for transmitting digitally-coded information, and the transponder comprising a demodulator capable of differentiating information received at a rate of a back-modulation sub-carrier of another transponder with respect to information received, at a rate of a third still lower frequency, from the terminal.

3. The transponder of claim 2 wherein said demodulator comprises two parallel branches, each having a filter respectively centered on the second and third frequencies, each filter being associated with a digital decoder.

4. The transponder of claim 3 wherein a first decoder associated with the filter centered on the back-modulation frequency is a decoder of phase shift type, a second decoder associated with the third frequency being a decoder of amplitude shift type.

5. A system of contactless and wireless communication between at least two electromagnetic transponders having no independent power supply, wherein each transponder comprises means capable of drawing power necessary to a supply of its circuits from an electromagnetic field at a first frequency radiated by at least one

10. The transponder of claim 8, further comprising a fifth circuit coupled to the first circuit to transmit a fourth signal.

11. The transponder of claim 10 wherein the fifth circuit includes a modulator having an output coupled to a transistor.

12. The transponder of claim 8, further comprising an analog unit coupled to the second and third circuits to respectively provide the second and third signals to be demodulated by either the second or third circuits, wherein the second circuit includes a decoder to detect the second frequency of and to demodulate the second signal provided by the analog unit, and wherein the third circuit includes a decoder to detect the third frequency of and to demodulate the third signal provided by the analog unit.

13. The transponder of claim 8 wherein the second circuit includes:

a first filter centered at the second frequency to filter the second signal; and

a first decoder coupled to the first filter to demodulate the filtered second signal, and wherein the third circuit includes:

a second filter centered at the third frequency to filter the third signal; and

a second decoder coupled to the second filter to demodulate the filtered third signal.

14. The transponder of claim 13 wherein the first decoder comprises a phase shift-type decoder, and wherein the second decoder comprises an amplitude shift-type decoder.

read/write terminal, and means for demodulating and decoding signals transmitted by another transponder in modulation of a sub-carrier at a second frequency.

6. The system of claim 5 wherein each transponder comprises separate demodulators and decoders respectively dedicated to reception of signals transmitted by another transponder and to the reception of signals transmitted by the read/write terminal.

7. The system of claim 5 wherein the first frequency is 13.56 MHz, the second frequency being 847.5 kHz, and the third frequency being 106.5 kHz.

8. A transponder, comprising:

a first circuit to receive a first signal having a first frequency and to provide power from the first signal;

a second circuit coupled to the first circuit to receive a second signal having a second frequency;

a third circuit coupled to the first circuit and coupled parallel to the second circuit to receive a third signal having a third frequency, the third signal being received from another transponder; and

a fourth circuit coupled to the second and third circuits to respectively process the demodulated second and third signals.

9. The transponder of claim 8 wherein the first circuit includes:

a first capacitor and inductor connected in parallel;

a rectifier circuit having input terminals coupled to the parallel connection of the capacitor and inductor;

a second capacitor coupled to output terminals of the rectifier circuit; and

a voltage regulator coupled to the second capacitor and to the rectifier circuit.

15. The transponder of claim 8 wherein the first frequency is higher than the second frequency, and wherein the second frequency is higher than the third frequency.

16. A method for a transponder, the method comprising:

receiving a first signal having a first frequency and providing power from the first signal;

receiving a second signal having a second frequency and demodulating the received second signal;

receiving a third signal having a third frequency from another transponder and distinguishing the received third signal from the second signal and demodulating the received third signal; and

processing the demodulated second or third signals.

17. The method of claim 16 wherein distinguishing the received third signal from the second signal includes detecting whether a received signal is the third signal or the second signal based on the frequency of the received signal by using parallel decoders, one of which decodes based on the second frequency and the other one of which decodes based on the third frequency.

18. The method of claim 16 wherein distinguishing the received third signal from the second signal includes detecting, filtering a received signal to determine whether it is the third signal or the second signal based on the frequency of the received signal and using frequency bands centered on the second and third frequencies, the method further comprising decoding the filtered signal.

19. A system for a transponder, the system comprising:

a means for receiving a first signal having a first frequency and providing power from the first signal;

a means for receiving a second signal having a second frequency and demodulating the received second signal;

a means for receiving a third signal having a third frequency from another transponder and distinguishing the received third signal from the second signal and demodulating the received third signal; and

a means for processing the demodulated second or third signals.

20. The system of claim 19 wherein the means for demodulating the second and third signals include a means in parallel for decoding the second and third signals separately.